

Section 3. Natural Gas

Natural gas prices are developed for the residential, commercial, industrial, transportation, and electric power sectors. Reported natural gas prices are retail prices for sales of natural gas to ultimate users.

Natural gas prices are intended to include all federal, state, and local taxes, surcharges, and adjustments billed to consumers. Although the EIA data collection form states that taxes are to be included in the reported gross revenues, it is most likely that respondents would not consider sales taxes as part of their companies' gross revenues, and some may not be reporting them. As a result, consumer sales taxes may not be covered in full. For more information see *End-Use Taxes: Current EIA Practices*, page 23, <http://www.eia.gov/finance/archive/0583.pdf>.

Estimates of the amount of natural gas consumed by the residential, commercial, industrial, and electric power sectors are taken from the State Energy Data System (SEDS). Estimates for the industrial sector are adjusted to remove estimated refinery consumption and lease and plant use of natural gas, and estimates of transportation sector use are adjusted to remove pipeline fuel in each state. (See the discussion in Section 7, "Consumption Adjustments for Calculating Expenditures," at <http://www.eia.gov/state/seds/seds-technical-notes-complete.cfm>.) The consumption estimates are for natural gas including supplemental gaseous fuels (SGF). SGF are introduced into or commingled with natural gas, and increase the volume available for disposition. Because SGF are mostly derived from fossil fuels, which are already accounted for, they are removed from total energy consumption in Btu (see Sections 6 and 7 of the Consumption Technical Notes) to eliminate any double counting. However, since there are no reliable data to estimate the price of SGF, total energy expenditures in Btu are not adjusted to eliminate the double counting.

Residential, Commercial, and Industrial Sectors

Prices: 1987 Forward

All natural gas physical unit prices by state for the residential, commercial, and industrial sectors are taken from data collected on the Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." These prices are available on the U.S. Energy Information Administration's (EIA) website at <http://www.eia.gov/naturalgas/data.cfm> and published in the State Summaries tables of the EIA *Natural Gas Annual*.

Prices: 1970 Through 1986

All natural gas physical unit prices for the residential, commercial, and industrial sectors are calculated from value and quantity of sales data from the EIA *Natural Gas Annual (NGA)*, *Historical Natural Gas Annual (HNGA)*, or its predecessor report, *Natural Gas Production and Consumption*. State prices are calculated directly from the data sources as average revenue per unit of sales by natural gas utilities. Prices for each of the three sectors are calculated by dividing the value of natural gas, reported in thousands of dollars, by the quantity of natural gas sold, as reported in million cubic feet.

For 1970 through 1979, both the value and quantity of sales data from the *HNGA* are reported as composites for Maryland and the District of Columbia, and for Maine, New Hampshire, and Vermont. In each case, the combined prices are assigned to each of the states in the composite.

Btu Prices: All Years

State Btu prices for all years are calculated by using the physical unit price series and the state-level average conversion factors for sectors other than electric power. U.S. Btu prices are calculated as the average of the state Btu prices, weighted by consumption data from SEDS and adjusted for process fuel consumption in the industrial and transportation sectors.

Data Sources**Prices**

1997 forward: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PRS_DMcf_a.htm, http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PCS_DMcf_a.htm, and http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PIN_DMcf_a.htm.

1989 through 1996: Residential and Commercial — EIA website, at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PRS_DMcf_a.htm and http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PCS_DMcf_a.htm. Industrial — EIA, *Historical Natural Gas Annual, 1930 Through 2000*, http://www.eia.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga.html, Tables 31 and 32.

1987 and 1988: EIA, *Historical Natural Gas Annual, 1930 Through 2000*, http://www.eia.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga.html, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

1980 through 1986: Calculated from quantity and value data published in the EIA *Natural Gas Annual, Volume 1*, Table 11 (1980), Table 14 (1981 through 1985), and Table 15 (1986). Comparable price data are available in the EIA *Historical Natural Gas Annual, 1930 Through 2000*, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

1970 through 1979: Calculated from quantity and value data published in the Bureau of Mines, U.S. Department of the Interior, *Natural Gas Production and Consumption*, Table 6 (1970 and 1979) and Table 7 (1971 through 1978). Comparable price data are available in the EIA *Historical Natural*

Gas Annual, 1930 Through 2000, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

Consumption

1970 forward: EIA, State Energy Data System, residential, commercial, and industrial natural gas consumption.

Conversion Factors: All Years

EIA, conversion factors published in State Energy Data System Consumption Technical Notes, Tables B4 and B5, <http://www.eia.gov/state/seds/seds-technical-notes-complete.cfm>.

Transportation Sector

Most of the natural gas used for transportation is consumed in pipeline operations and is discussed in Section 7, “Consumption Adjustments for Calculating Expenditures,” at <http://www.eia.gov/state/seds/seds-technical-notes-complete.cfm>. Data for natural gas delivered for use as vehicle fuel are available beginning in 1990. In prior years, these data are included in the commercial sector. Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily by fleet vehicles.

For 1992 forward, vehicle fuel prices are not available for some states. When that occurs, the average price of neighboring states is assigned as shown in Table TN13. The South Carolina price in 1998 is out of range and the price of natural gas used as vehicle fuel in Georgia for 1998 is assigned.

Data Sources**Prices**

1990 forward: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PDV_DMcf_a.htm. Comparable price data through 1996 are available in the *Historical Natural Gas Annual 1930 Through 2000*, Table 34.

Table TN13. Natural Gas Vehicle Fuel Price Assignments, 1992 Forward

State	Years	State Prices Used
AK	1997–2012	WA
AL	2000–2005	FL, TN
	2006, 2007	FL, GA, TN
AR	2008–2011	OK, LA, MO, TN, TX
DE	1994	MD, NJ, PA
GA	1999	AL, FL, SC, TN
	2000–2005	FL, NC, SC, TN
HI	2005–2007	CA
IA	2001–2006	IL, MO, MN, WI
ID	2003–2005	MT, NV, OR, UT, WA, WY
KS	2004–2010	CO, MO, OK
KY	2004–2006	IL, IN, OH, MO, TN, VA
	2007–2012	IL, IN, MO, TN, VA
MD	2012	VA
ME	1992–2002, 2008–2012	MA
MI	2000–2006	IN, OH
	2007–2012	IN
MS	2002–2007	AR, LA, TN
	2008–2012	AL, LA, TN
NC	1996, 1997, 1999	SC, TN, VA
	1998	TN, VA
	2008	GA, SC, TN, VA
NE	1992, 1993	CO, IA, SD, WY
	1995–2000	CO, IA, KS, MO, SD, WY
	2001–2003	CO, KS, MO, WY
	2004–2006, 2008–2010	CO, MO, WY
	2007	CO, IA, MO, WY
NH	1996–2012	MA
NJ	2002	DE, NY, PA
	2007–2012	NY, PA
NM	1992, 1993, 2008	AZ, CO, OK, TX
OH	2007–2012	IN, PA
SC	1998	GA
SD	2001, 2003, 2004,	MN, MT, ND, WY
	2006, 2010–2012	
VT	1992–2012	MA

Consumption

1990 forward: EIA, State Energy Data System, natural gas vehicle consumption.

Conversion Factors: All Years

EIA, conversion factors published in State Energy Data System Consumption Technical Notes, Tables B4 and B5, <http://www.eia.gov/state/seds/seds-technical-notes-complete.cfm>.

Electric Power Sector

Prices: 2002 Forward

All natural gas physical unit prices by state for the electric power sector are taken from the State Summaries tables of the EIA *Natural Gas Annual*. Prior to 2008, where individual state prices are unavailable, they are developed by calculating the average price of all available surrounding states. From 2008 forward, the average delivered cost of natural gas to regulated electric power plants, compiled from Schedule 2 of the EIA-923, “Power Plant Operations Report,” is used to supplement missing *Natural Gas Annual* prices. If prices from both sources are not available, the average price of all available surrounding states is used. Table TN14 lists the states and years where price assignments are made.

Prices: 1973, 1974, 1983 Through 2001

Natural gas prices by state are reported in the EIA *Cost and Quality of Fuels for Electric Plants (C&Q)* for gas consumed at steam-electric plants only. Btu prices are taken from the *C&Q*, and converted from cents to dollars per million Btu.

Where individual state prices are unavailable from *C&Q*, they are developed from physical unit prices published in Tables 26 through 76 of the *NGA* (from 1997 forward), or the *Historical Natural Gas Annual, 1930 Through 2000 (HNGA)*, from 1987 through 1996). Physical unit prices prior to 1987 are calculated by dividing the value of natural gas, reported in thousands of dollars, by the quantity of natural gas sold, reported in million cubic feet.

Prices are not available from either *C&Q* or the *NGA* and *HNGA* for some years. In these cases, quantity-weighted Census division prices from *C&Q* are assigned. In addition, prices for Montana in 1997, Vermont in 1986,

Table TN14. Natural Gas Electric Power Sector Price Assignments, 1973 Forward

State	Years	Price Source	State	Years	Price Source
AK	1973–1990	<i>HNGA</i>		2008, 2009	EIA-923 Sch 2 data
	2008–2010	EIA-923 Sch 2 data	NE	2008–2010	EIA-923 Sch 2 data
AL	2011	EIA-923 Sch 2 data	NH	1973, 1974, 1987–1989	<i>HNGA</i>
AR	2011	EIA-923 Sch 2 data		1983, 1996, 1998	<i>C&Q, New England</i>
AZ	2011	EIA-923 Sch 2 data		2003, 2004	MA, ME
CO	2012	EIA-923 Sch 2 data		2005–2007	MA, VT
CT	1974–1976	<i>HNGA</i>		2008–2012	EIA-923 Sch 2 data
	1973, 2000, 2001	<i>C&Q, New England</i>	NM	2003–2007	AZ, CO, OK, TX
	2003, 2004	MA, NY, RI		2009–2012	EIA-923 Sch 2 data
DC	2012	VA	OH	2011	EIA-923 Sch 2 data
DE	2003–2007, 2011	MD, NJ, PA	OK	2011	EIA-923 Sch 2 data
	2008–2010	EIA-923 Sch 2 data	OR	1983, 1984, 1986, 1989, 1990	<i>C&Q, Pacific</i>
	2012	NJ, PA		2011, 2012	EIA-923 Sch 2 data
IA	2008–2011	EIA-923 Sch 2 data	PA	1973	<i>HNGA</i>
ID	1983–1986	<i>HNGA</i>	RI	1976, 1980	<i>HNGA</i>
	1974, 1987, 1996–2001	<i>C&Q, Mountain</i>		1999–2001	<i>C&Q, New England</i>
	2003–2005	NV, OR, WA, WY	SC	1977	<i>HNGA</i>
	2006, 2007	NV, OR, WA		2003, 2004	GA, NC
	2008–2012	EIA-923 Sch 2 data		2005	GA
IL	2011, 2012	EIA-923 Sch 2 data		2009–2012	EIA-923 Sch 2 data
IN	2011, 2012	EIA-923 Sch 2 data	SD	1983–1990	<i>HGNA</i>
KY	2003–2005	IL, IN, OH, VA, WV		1997, 1999–2001	<i>C&Q, West North Central</i>
	2007	IL, IN, OH, VA		2005	GA
	2008–2012	EIA-923 Sch 2 data		2009, 2010	EIA-923 Sch 2 data
LA	2011	EIA-923 Sch 2 data	TN	1976, 1980, 1981, 1983, 1988–1996	<i>HNGA</i>
MD	1973, 1974, 1983–1985	EIA-923 Sch 2 data		1997–2001	<i>C&Q, East South Central</i>
	2001	<i>HNGA</i>		2003, 2004	AL, AR, GA, MS, NC, VA
	2012	<i>C&Q, South Atlantic</i>		2005–2007	AL, AR, GA, MS, VA
ME	1997–2001	PA, VA	UT	2008	EIA-923 Sch 2 data
	2005–2012	<i>C&Q, New England</i>		1988, 1989	<i>HNGA</i>
MN	2003–2007	MA		2003–2005	AZ, CO, NV, WY
	2009–2012	IA, ND, WI		2006, 2007	AZ, CO, NV
MO	2003–2007	EIA-923 Sch 2 data	VA	2008–2011	EIA-923 Sch 2 data
	2008–2012	AR, IA, IL, KS, NE, OK	VT	2011	EIA-923 Sch 2 data
MS	2009–2012	EIA-923 Sch 2 data		1983–1985, 1989, 1990	<i>HGNA</i>
MT	1997, 2006, 2007	<i>C&Q, Mountain</i>		1986	<i>C&Q, New England</i>
	2003–2005	ND, WY		2003, 2004	MA, NY
	2008–2012	EIA-923 Sch 2 data	WA	1978, 1983–1985, 1988, 1989	<i>HGNA</i>
NC	1983–1990	<i>HNGA</i>		1986, 1987, 1990, 1997, 1999–2001	<i>C&Q, Pacific</i>
	2005	GA, VA		2002	OR
	2006, 2007	GA, SC, VA	WV	2011, 2012	EIA-923 Sch 2 data
	2009–2012	EIA-923 Sch 2 data		2007	OH, MD, PA, VA
ND	1973, 1974, 1976–1986	<i>HNGA</i>	WY	2011	EIA-923 Sch 2 data
				2006, 2007	CO, NE
				2008–2012	EIA-923 Sch 2 data

and Washington in 1986, 1987, 1990, and 1997 use quantity-weighted Census division prices from *C&Q* for more consistent prices than those available from the *HNGA* or more consistent with values in previous and later years. Table TN14 lists the States and years for which *HNGA* or *C&Q* Census division prices are used.

Prices: 1980 Through 1982

State-level Btu and physical unit prices for 1980 through 1982 are taken from *C&Q* for all reporting plants. Physical unit prices are taken directly from the data source, while Btu prices are converted from cents to dollars per million Btu. Where individual State prices are unavailable from *C&Q*, they are computed from value and quantity of sales data from *HNGA*.

Prices: 1973 Through 1979

State-level prices are reported separately by *C&Q* for gas consumed at steam-electric plants and gas consumed at combustion turbine and internal combustion units. Weighted-average Btu prices are calculated by using the two *C&Q* prices and the respective gas deliveries for steam-electric and combustion use. Where individual State prices are unavailable from *C&Q*, they are computed from value and quantity of sales data from *HNGA*. For the New Hampshire price in 1977 a combined price is computed from value and quantity of sales data from the *HNGA* data for Maine, New Hampshire, and Vermont.

Prices: 1970 Through 1972

State-level prices for 1970 through 1972 are taken from *Natural Gas Production and Consumption* and are calculated similarly to the way prices for the residential, commercial, and industrial sectors are calculated. Prices, as average revenue per unit of sales, are computed from value and quantity of sales data from the source reports. A combined price is reported for New Hampshire and Vermont for 1971 and 1972, and each of these States is assigned the combined price. State Btu prices are calculated from the physical unit prices by using the State-level electric power conversion factors.

Table TN15. Tables from EIA Cost and Quality of Fuels for Electric Plants Used as Data Sources

Years	Price Data	Volume Data
1973, 1974	Table 10	Table 9
1975–1979	Table 10, 16	Table 9, 15
1980–1982	Table 48	-
1983, 1984	Table 53	-
1985–1987	Table 43	-
1988, 1989	Table 44	-
1990–1994	Table 12 (1994 edition)	-
1995–1996	Table 12 (1999 edition)	-
1997–2001	Table 12 (2001 edition)	-

U.S. Prices: All Years

U.S. Btu prices are calculated as the average of the State Btu prices, weighted by consumption data from SEDS.

Data Sources

Prices

Primary Sources:

2002 forward: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PEU_DMcf_a.htm.

1973 through 2001: EIA, *Cost and Quality of Fuels for Electric Power Plants*, <http://www.eia.gov/electricity/cost-quality/> (table numbers shown in Table TN15).

Secondary Sources:

2008 forward: EIA Office of Electricity, Renewables, and Uranium Statistics, data on average delivered cost of natural gas to regulated electric

power plants by State from EIA-923, "Power Plant Operations Report," <http://www.eia.gov/electricity/data/eia923/index.html>, Schedule 2.

2002 through 2007: EIA, *Cost and Quality of Fuels for Electric Power Plants*, http://www.eia.gov/electricity/cost_quality/, Table 13.

1997 through 2001: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_dcunusa.htm.

1990 through 1996: EIA, *Historical Natural Gas Annual 1930 Through 2000*, http://www.eia.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga.html, Table 31 and Table 32.

1980 through 1989: EIA, *Natural Gas Annual 1992, Volume 2*, Table 23.

1976 through 1979: EIA, Energy Data Reports, *Natural Gas Production and Consumption*, Table 7 (1976 through 1978) and Table 6 (1979). Comparable price data are available in the *Historical Natural Gas Annual, 1930 Through 2000*, Table 35.

1970 through 1975: Bureau of Mines, U.S. Department of the Interior, *Natural Gas Production and Consumption*, Table 6 (1970) and Table 7 (1971

through 1975). Comparable price data are available in the *Historical Natural Gas Annual, 1930 Through 2000*, Table 35.

Consumption

1970 forward: EIA, State Energy Data System, electric power sector natural gas consumption.

Conversion Factors

Btu prices that are calculated directly from *Cost and Quality of Fuels for Electric Plants (C&Q)*, or from EIA-923, "Power Plant Operations Report," require no conversion factors. When *Natural Gas Annual* data are used to develop prices that are missing from *C&Q*, conversion factors are used from the following source:

1970 forward: EIA, State Energy Data System Consumption Technical Notes, Tables B2 and B3, <http://www.eia.gov/state/seds/seds-technical-notes-complete.cfm>.